



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/785,174	02/24/2004	Shwin-Chung Wong	Wong 9301	8522

7590

09/06/2005

Hung Chang Lin  
8 Schindler Ct.  
Silver Spring, MD 20903

EXAMINER

WALBERG, TERESA J

ART UNIT

PAPER NUMBER

3753

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

88

**Office Action Summary**

Application No.

10/785,174

Applicant(s)

WONG, SHWIN-CHUNG

Examiner

Teresa J. Walberg

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-11 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 8 and 12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

### DETAILED ACTION

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 6, 7, 9-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al (6,601,643) in view of Sugito (6,681,843). Cho et al disclose (Figs. 1 and 2) a heat sink (1) for a heat generating device (30) including an enclosed metal chamber (10, 20) in contact with the heat generating device (30), a two phase vaporizable coolant (Fig. 1) to remove heat from the heat generating device (30), a flow path including upper and lower sections separated by a plate (Fig. 1), the lower section (at 13) functioning as part of a recycling passage for the condensed coolant, a sintered metal wick evaporator (40) in contact with the lower section to draw coolant from the lower section by capillary attraction, the coolant being vaporized by heat from an IC or CPU (col. 6, line 44).

Cho et al do not disclose the upper and lower sections being connected at their ends, and so not teach positioning the chamber in a vertical position.

Sugito discloses (Fig. 1) a heat sink (1) for a heat generating device (3) including an enclosed metal chamber (2) in contact with the heat generating device (3), a two phase vaporizable coolant (Fig. 1) to remove heat from the

heat generating device (3), a flow path including upper and lower sections separated by a plate (5), and connecting the ends of the heat flow path (Fig. 1). Sugito additionally teaches that such a device can be positioned vertically. See Fig. 1.

It would have been obvious in view of Sugito to connecting upper and lower ends of a heat flow path of Cho et al to make the heat sink apparatus self contained, and to position the device in a vertical position to enable easier use of the device for cooling vertically positioned ICs.

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al (6,601,643) in view of Sugito (6,681,843) as applied to claims 1-3, 6, 7, 9-11 and 13-15 above and further in view of Eastman (4,274,479).

Cho et al in view of Sugito disclose the claimed structure with the exception of the material of the sintered metal wick.

Eastman teaches making a sintered metal wick of copper powder (col. 4, lines 18-20).

It would have been obvious in view of Eastman to use copper for the material of the sintered metal wick of Cho et al in view of Sugito in view of the teaching of Eastman that copper is an advantageous material for use in sintered metal wicks.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cho et al (6,601,643) in view of Sugito (6,681,843) as applied to claims 1-3, 6, 7, 9-11 and 13-15 above and further in view of Feldman (3,613,778).

Cho et al in view of Sugito disclose the claimed structure with the exception of the capillary element being a metal mesh or metal cloth.

Feldman teaches making a metal wick of metal mesh (col. 2, lines 9-12).

It would have been obvious in view of Feldman to use metal mesh for the material of the sintered metal wick of Cho et al in view of Sugito in view of the teaching of Feldman that copper is an advantageous material for use in sintered metal wicks.

5. Claims 8 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.


6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Batchelder, Son et al, Ohara, Ghoshal, and Lindemuth et al are cited to show heat pipe structure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 571-272-4790. The examiner can normally be reached on M-F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on 571-272-4930. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Teresa J. Walberg  
Primary Examiner  
Art Unit 3753

tjw